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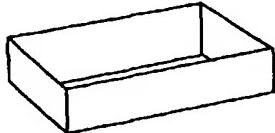
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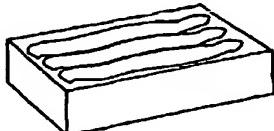
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(54) Title: AN INLINE MULTIMODAL PACK SYSTEM AND CONTAINERS THEREOF

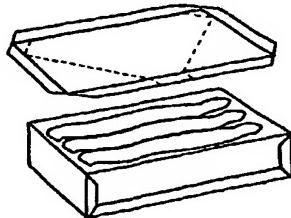
Case Erecting



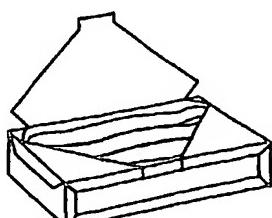
Case Packing



Case Lidding



Access to Product Reclosure



(57) Abstract: A case erected from multiple blanks in a machine and provided with a lid post filling. Two different modes of the filled box are provided for transporting frozen products such as meat. The case is erected from a first blank of a base and two dependent end panels, a second blank of a sidewall with an end wall attachment and/or reinforcement panel at each end of the sidewall, and a third blank similar to the second blank. A lid panel ("case lidding") with attachment flaps and a frangible tear open zone is a fourth blank. In a first mode the construction of the second and third blanks are more substantial than in the second mode with respect to the extent of the end wall attachments of the sidewalls and/or the material used. The first mode provides greater structural and stacking strength while the second mode has a reduced cost with lesser materials.

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"AN INLINE MULTIMODAL PACK SYSTEM AND CONTAINERS THEREOF"**TECHNICAL FIELD**

The present invention relates to a machine line adapted for erecting at least in part two types of container for lidding subsequently or in the line itself and to containers thus made and to related components, methods and assemblies.

BACKGROUND ART

In the transportation of produce such as meat, fish and the like, higher quality produce is frequently packed without any pre-freezing and with the intention that it reach a consumer without ever having been frozen. This is particularly the case where higher grades of animal meats can be packed and transported in a controlled atmosphere.

With frozen materials however, usually of a lower grade meat or for a less demanding end consumer (e.g. hamburger meats), some advantage can be derived from the integrity that a mass of frozen product within a container can provide to the overall pack insofar as strength is concerned. Indeed some forms of packaging containers that simply adhere to the frozen content have found favour.

The present invention however recognises that significant cost savings are available to an end user (i.e. the packing house) where a machine line can be provided adapted to receive similar componentry and to be operated in at least two modes, one mode for preparing a container to be filled with meat or the like produce that is to be chilled only and, in another mode, for preparing a container to be loaded with produce to be frozen.

In the second instance one or more of the components can be provided of a cheaper material or of a cheaper form or both.

It is therefore an object of the present invention to provide a machine line and products erectable by such a machine line which will at least provide the public with a useful choice. It is also or instead the intention of the present invention to offer a container suitable for chilled meat or like produce where a perforate or like lidding feature is provided preferably such that a lid of similar form as that which might be used for a frozen produce can be utilised save for that feature.

SUMMARY OF THE INVENTION

In a first aspect the present invention is a container erected or erectable from blank components preferably to define a container adapted for transporting chilled meat or like unfrozen products, said container being erected or erectable from

5 a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally (lateral with respect to the elongate axis of the base) extending flaps to allow the first blank's use as a side wall type bliss container wrap component,

10 a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel,

a third blank similar to the second blank, and

15 a fourth blank to define a lidding panel with attachment flaps to extend and adhesively be affixed to the top of the end wall panels and the side wall panels, said fourth blank having the lidding panel at least in part with perforate and/or frangible zones to encourage tear opening thereof.

Preferably the blank components are all of, at least in part, a paperboard or like laminate e.g. single or multiple cushion corrugated board.

Preferably the first, second and third blanks are erected and/or formed held for filling prior to fixing of the forth blank thereto.

20 Preferably the second and third blanks are adapted to bear vertically (in a flute run direction) anticipated stack loads of the meat or like filled erect containers.

Preferably the first blank, second blank, third blank, and/or fourth blank is substantially as hereinafter described with reference to any one of Figures 1A to 1DDD.

25 Preferably the container erects to a form substantially as hereinafter described with reference to Figures 1A through 3.

In a further aspect the present invention consists in a machine line for erecting (at least in part) two types of container, the machine line being adapted in one mode preferably to define a container adapted for transporting chilled meat or like unfrozen products, said container being erected or erectable from at least

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a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally (lateral with respect to the elongate axis of the base) extending flaps to allow the first blank's use as a side wall bliss container wrap component,

5 a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel,

a third blank similar to the second blank, and

the machine being adapted in a second mode preferably to define a container adapted for transporting frozen meat or like frozen products, said container being erected or erectable
10 from at least

a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally (lateral with respect to the elongate axis of the base) extending flaps to allow the first blank's use as a side wall bliss container wrap component,

15 a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel, and

a third blank similar to the second blank,

and wherein, in each of the modes, the container is adapted to be closed (once filled) by
20 a fourth blank to define a lidding panel with attachment flaps to extend and adhesively be affixed to the top of the end wall panels and the side wall panels,

and wherein, in the first mode, the construction of the second and third blanks is more substantial than in the second mode with respect to

- 1) the extent of the end wall attachment and/or reinforcement panel at each end of the side wall panel,
- 2) the material from which the second and third blanks are formed, or
- 3) both (1) and (2).

Preferably the machine line is in or includes a fill line, i.e. the line first erects (at least in part) a carcase (e.g. of first, second or third blanks), fills the carcase, and closes it with a fourth blank.

30 Preferably in each mode the first blank is identical.

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Preferably the modes of erection involves the use of hot melt adhesive.

Preferably each container is adapted to be filled with its intended content before the machine line or some separate apparatus attaches any part of the fourth blank thereto.

Preferably the fourth blank is affixed by use of hot melt adhesive.

5 Preferably in said first mode said container is a container as previously defined when the fourth blank has been fixed thereto.

Preferably the container erectable in the second mode is a similar container to that previously described when the fourth blank is fitted thereto although

10 (A) preferably without the lidding panel having at least in part perforate and/or frangible zones to encourage tear opening thereof; and

(B) preferably without both the structural strength of the material from which the second and third blanks of the first mode are formed and without the end wall attachment and/or reinforcement panels extending inwardly as far as in the first mode.

15 Preferably such panels substantially or more or less meet at the central axis of the container in a first mode container whereas, in the second mode container, they are merely relatively small intrusions towards the centre (i.e. they do not confer any substantial reinforcement near that provided in the first mode).

20 In still a further aspect the present invention consists in a use of a machine [such as that used by this company for erection of its "PLB" trays (available under license from us from Rob Jennings Developments Limited, Tauranga, New Zealand)] in a machine line as previously set forth.

Preferably the container of the second mode is substantially of a form as hereinafter described with reference to Figures 2A to 2D.

25 In another aspect the present invention consists in, in combination, the blanks of a mode 1 and/or a mode 2 container as herein defined.

In still a further aspect the present invention consists in, in combination, a mode 1 and/or a mode 2 type of container set of blanks and a machine capable of erecting at least the carcase of one or both modes.

Preferably said machine is of a kind as previously referred to.

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In still a further aspect the present invention consists in a fill line which includes in the fill line a machine adapted first to erect a carcase to be filled of a mode 1 and/or mode 2 type container and, post filling, to allow the fitting of the lidding feature thereto. The fitting of the lid can be manually or with the assistance of machinery.

5 In still a further aspect the present invention consists in, in any machine line, the capability of erecting to the extent required for filling with produce any container or container sub-assembly of the two types herein described with reference to any one or more of the accompanying drawings and thereafter lidding each such container or container sub-assembly when so filled.

10 Reference herein to "filling" preferably includes partial filling but preferably for best conferring of strength, at least in the frozen meat or the like produce packs, there is a substantial filling.

As used herein the term "and/or" means "and" or "or", or both as the circumstance allows.

15 As used herein the term "(s)" means the plural and/or singular forms of that noun.

In still another aspect the present invention consists in a pack produced from blanks in accordance with the present invention, in line using a machine line of the present invention, using a machine as previously referred to or using, in any machine line, the capability referred hitherto as the invention.

20 BRIEF DESCRIPTION OF THE DRAWINGS

A preferred form of the present invention will now be described with reference to the accompanying drawings in which;

25 **Figure 1A** is a plan view of a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally extending flaps to allow its use as such a side wall bliss container wrap component,

Figure 1B is a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel,

30 **Figure 1C** is a similar component to that of Figure 1B but to define the other side wall of the erected container,

Figure 1D is one optional form of a fourth component of a container in accordance with the present invention having one mode of perforate removal zone extending from an attachment flange into its lidding panel,

Figure 1DD is an alternative arrangement of a fourth component as in Figure 1D,

5 Figure 1DDD is still a further embodiment of a perforate zone, in each instance in Figures 1D through 1DDD the perforate zone having a commencement region on a non glued or loosely glue attached region of a lid flap or flange attached to the top of a side wall (although it could be to an end wall),

10 Figure 2A shows a component identical in form to that of Figure 1A for use in a container formed in the second mode of construction,

Figure 2B is a second blank of the second component having partial yet full height end wall reinforcement panels at each end, in fact these, in this form, preferably assuming a low inward intrusion flap form which confers little in the way of stacking strength (despite preferably a vertical flute run direction) in an erected container,

15 Figure 2C is a third blank being identical to that of Figure 2B,

Figure 2D is a lid blank component (fourth blank) preferably without the perforate features of Figures 1D through 1DDD suitable for closing a container to hold frozen contents,

Figure 3 is an isometric view of an erected container of either of the two modes (save for a non showing of the perforate region preferred for a container of the first mode),

20 Figure 4 is an isometric view of a partially erected lidded container formed from components 1A through 1C,

Figure 5 is a similar view to that of Figure 4 but reliant upon components of Figures 2A through 2C,

Figure 6 is a flow diagram of usage of components of the present invention, and

25 Figure 7 is a flow diagram showing machine functions relative to component supply, erection, and usage.

DETAILED DESCRIPTION OF THE INVENTION

In the preferred form of the present invention the intention is to reduce the cost by both a common machine usage and the reduction in cost of the second mode variant container by reliance upon, for at least the component shown in Figures 2B and 2C, a material of lesser

strength and cost and having a lesser paper or other material requirement. In some forms of the present invention lesser materials can be utilised for each of the components of Figures 2A and 2D or at least one of them.

Whilst the form of the components of Figures 1A and 2A are identical they preferably 5 use the same material but need not necessarily do so.

In the preferred form of the present invention as depicted in Figure 1 the first blank defines a rectangular base 1 (of course once erected and lidded it does not matter which way up a container is), end wall panels 2 and flaps 3 and 4 for each of the panels 1 and 2 respectively.

A suitable material for a construction as shown in Figure 1A is a corrugated paperboard 10 such as "E" flute (e.g. 414E).

Figure 1B and 1C shows the second and third blank components respectively with side wall panels 5 and end wall attachment and/or reinforcement flaps 6.

Preferably these flaps 6 are hot melt tacked or otherwise affixed to the inner face of a panel 2 but this is not mandatory if there is sufficient overall strength in the attachment of the 15 components reliant upon other flanges. Normally however for strength, particularly with chilled meat, there is attachment of panels 6 to an end panel 2.

The lid as depicted includes a lid defining region 7 that generally conforms in shape to the base 1 but which has hinged therefrom flaps or flanges 8 each to attach to the outside surface of a panel 2 or 5 respectively.

20 A feature of the lidding forms of 1D through 1DDD, is in each instance, lines of perforation 9 to provide a tear out region. Preferably such tearing can proceed from a perforate or cut out zone 10 that extends down into one of the flanges 8 or right through a flange 8 as in the case shown by the region 11 in Figure 1DDD.

In the preferred form of the present invention the material of the first blank is preferably 25 an "E" flute corrugated board such as 414E. Preferably the second and third blank components are of "powerply", i.e. 711717SWC. In the case of the lids of drawings Figures 1D through 1DD preferably the material is a low cost corrugated board such as 212WB.

As can be seen from Figures 2A through 2D similar components are utilised but these 30 can be of lower overall form and thus cost or be of a different material. The component of Figure 2B and 2C preferably has end wall attachment flanges 6B which equate to panels 6 of Figures B and C respectively. These flanges however do require hot gluing or other adhesive

fixing to the inside of a panel 2B with the overall strength of an erected container reliant upon strong hot glue or other adhesive fixing of flanges 3B, 4B and 8B as shown in the ensuing drawings.

The second mode container of Figures 2A through 2D, Figure 3 and Figure 5 preferably has component 2A to a similar form (even the same material) as for the first mode container but it could be of a reduced material quality if costs do need to be further pared. The components of Figures 2B and 2C however are of a reduced quality over those used for components 1B and 1C. In this case a material such as a single cushion corrugated board (e.g. 414SC) can be utilised. As far as the lid form of Figure 2D is concerned preferably a material similar to that of components 1D to 1DDD are utilised (e.g. 212WB).

Whilst it is preferable that a paperboard base product is used as the material to be die cut for making the blanks, persons skilled in the art will appreciate how, if desired, any such materials can be lined with materials that confer some additional property. For example, a vacuum metallised polymeric film or other foil or film can be utilised to confer greater heat insulation and waterproofing. Indeed certain lining coatings interiorly and/or exteriorly can be utilised if desired for greater water resistance.

A feature of the side wall bliss forms of each of the two modes of the present invention is the largely leaving clear for printing purposes of the end wall panels. Indeed, in the form particularly of Figures 1A to 1DDD, the end flaps can, if desired, be inserted internally of the end wall attachment and/or reinforcement flaps although this is less desired as it means some compromise in the assembly of the carcase of the overall lidded container.

Figure 6 shows as a flow diagram case erecting, case packing, case lidding and access to product with the option of re-closure using a preferred embodiment of the present invention where the packing is chilled meat.

Figure 7 shows a flow diagram which operates to produce the side bliss form base, fill it, and lid it as the erected side bliss base moves in the arrowed direction from the erector.

Shown by appropriate schematic forms is supply apparatus 12 to supply the first blank and supply apparatus 13 and 13A to supply the second and third blanks respectively such that the three blanks can be erected in the side bliss erector 14 which can be any suitable adaption of a bliss former.

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Thereafter the erected base is case packed at 15 prior to presentation to a case lidding machine 16 which having received a fourth blank from the supply apparatus 17 lids the filled base to provide the resultant lidded case 18.

Persons skilled in the art will appreciate how by taking costs out of a frozen pack, whilst 5 relying on a common line to that suitable for a non frozen produce fill line, can make significant end user savings possible.

Whilst it is envisaged that the total blank to container erection occurs in or adjacent a fill line, persons skilled in the art will appreciate how other variants can be employed that lead to partial erection off site although this is far from desirable and detracts from some of the benefits 10 of the present invention confers.

CLAIMS:

1. A container erected or erectable from blank components to define a container said container being erected or erectable from

5 a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally (lateral with respect to the elongate axis of the base) extending flaps to allow the first blank's use as a side wall type bliss container wrap component,

a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel,

10 a third blank similar to the second blank, and

a fourth blank to define a lidding panel with attachment flaps to extend and adhesively be affixed to the top of the end wall panels and the side wall panels, said fourth blank having the lidding panel at least in part with perforate and/or frangible zones to encourage tear opening thereof.

15 2. A container of claim 1 adapted for or at least suitable for transporting chilled meat or like unfrozen products.

3. A container of claim 1 or 2 wherein the blank components are all of, at least in part, a paperboard or like laminate.

20 4. A container of any one of the preceding claims wherein at least one of the blank components is of a single or multiple cushion corrugated board.

5. A container of any one of the preceding claims wherein the first, second and third blanks are erected and/or former held for filling prior to fixing of the forth blank thereto.

25 6. A container of any one of the preceding claims wherein the second and third blanks are of a corrugated board material adapted to bear vertically (in a flute run direction of the corrugated board material) anticipated stack loads of the meat or like filled erect containers.

7. A container of any one of the preceding claims wherein the first blank, second blank, third blank, and/or fourth blank is substantially as herein described with reference to any one of Figures 1A to 1DDD.

30 8. A container of any one of the preceding claims wherein the container erects to a form substantially as herein described with reference to Figures 1A through 3.

9. A machine line for erecting (at least in part) two types of container, the machine line being adapted in one mode to define a container, said container being erected or erectable from at least

5 a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally (lateral with respect to the elongate axis of the base) extending flaps to allow the first blank's use as a side wall bliss container wrap component,

a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel,

10 a third blank similar to the second blank, and

the machine being adapted in a second mode to define a container, said container being erected or erectable from at least

15 a first blank to define a side wall type bliss container wrap component to define a rectangular base panel and end wall panels dependent therefrom, the base and each end wall panel having laterally (lateral with respect to the elongate axis of the base) extending flaps to allow the first blank's use as a side wall bliss container wrap component,

a second blank to define a full height side wall panel and a partial yet full height end wall attachment and/or reinforcement panel at each end of the side wall panel, and

a third blank similar to the second blank,

20 and wherein, in each of the modes, the container is adapted to be closed (once filled) by a fourth blank to define a lidding panel with attachment flaps to extend and adhesively be affixed to the top of the end wall panels and the side wall panels,

and wherein, in the first mode, the construction of the second and third blanks is more substantial than in the second mode with respect to

- 25 1) the extent of the end wall attachment and/or reinforcement panel at each end of the side wall panel,
2) the material from which the second and third blanks are formed, or
3) both (1) and (2).

30 10. A machine of claim 9 wherein either or both defined container(s) is adapted for transporting frozen meat or like frozen product(s).

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11. A machine line of claim 9 or 10 which is in or includes a fill line.

12. A machine line of claim 11 which first erects (at least in part) a carcase of first, second or third blanks, fills the carcase, and closes it with a fourth blank.

13. A machine line of any one of claims 9 to 12 which in each mode the first blank is
5 identical.

14. A machine line of any one of claims 9 to 13 which the modes of erection involves the use of hot melt adhesive.

15. A machine line of claim 9 or 10 which each container is adapted to be filled with its intended content before the machine line or some separate apparatus attaches any part of the
10 fourth blank thereto.

16. A machine line of claim 15 which the fourth blank is affixed by use of hot melt adhesive.

17. A machine line of claim 9, in said first mode, defines a container as claimed in any one of claims 1 to 8.

15 18. A machine line of claim 9 or 17, in the second mode defines a container when the fourth blank is fitted thereto;

(A) without the lidding panel having at least in part perforate and/or frangible zones to encourage tear opening thereof; and

20 (B) preferably without both the structural strength of the material from which the second and third blanks of the first mode are formed and without the end wall attachment and/or reinforcement panels extending inwardly as far as in the first mode.

19. A machine line of any one of claims 9 to 18 which such panels substantially or more or less meet at the central axis of the container in a first mode container whereas, in the second mode container, they are merely relatively small intrusions towards the centre (i.e. they do not confer any substantial reinforcement near that provided in the first mode).

25 20. A machine line of any one of claims 9 to 19 in which the container of the second mode is substantially of a form as hereinafter described with reference to Figures 2A to 2D.

21. In combination, the blanks of a mode 1 and/or a mode 2 container as claimed in any one of claims 1 to 8.

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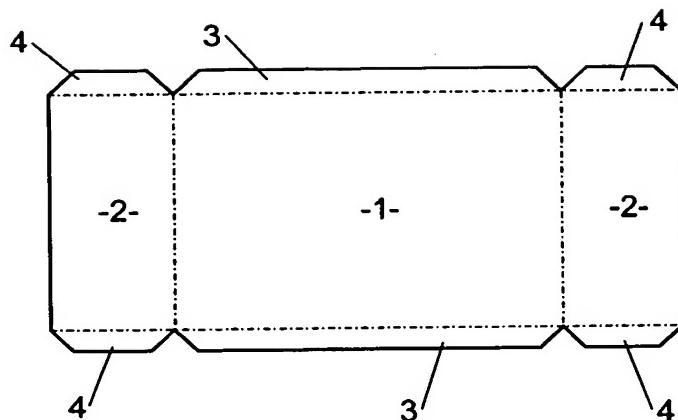
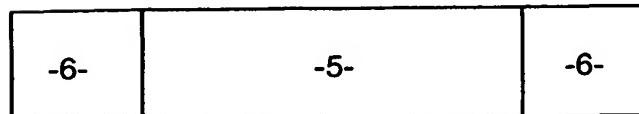
22. **In combination**, a mode 1 and/or a mode 2 type of container set of blanks as defined in any one of claims 1 to 8 and a machine capable of erecting at least the carcase of one or both modes.

5 23. A fill line which includes in the fill line a machine line adapted first to erect a carcase to be filled of a mode 1 and/or mode 2 type container of any one of claims 9 to 20 and, post filling, to allow the fitting of the lidding feature thereto.

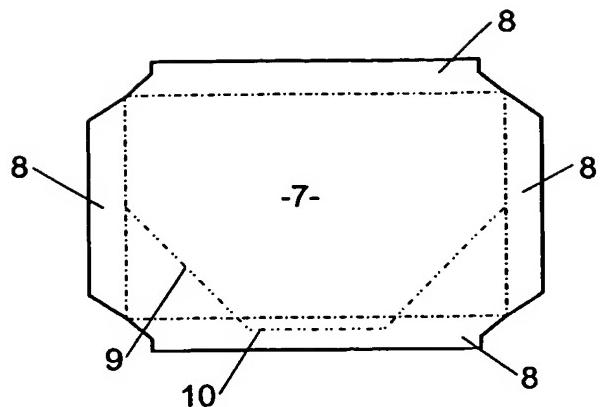
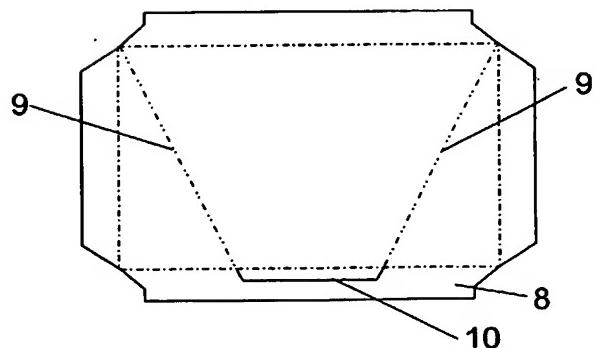
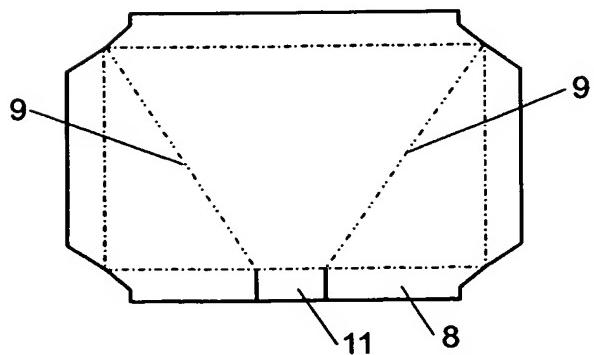
10 24. **In any machine line**, the capability of erecting to the extent required for filling with produce any container or container sub-assembly of the two types herein described with reference to any one or more of the accompanying drawings and thereafter lidding each such container or container sub-assembly when so filled.

25. A pack produced from blanks in accordance with any one of claims 1 to 8 using a machine line of any one of claims 9 to 20.

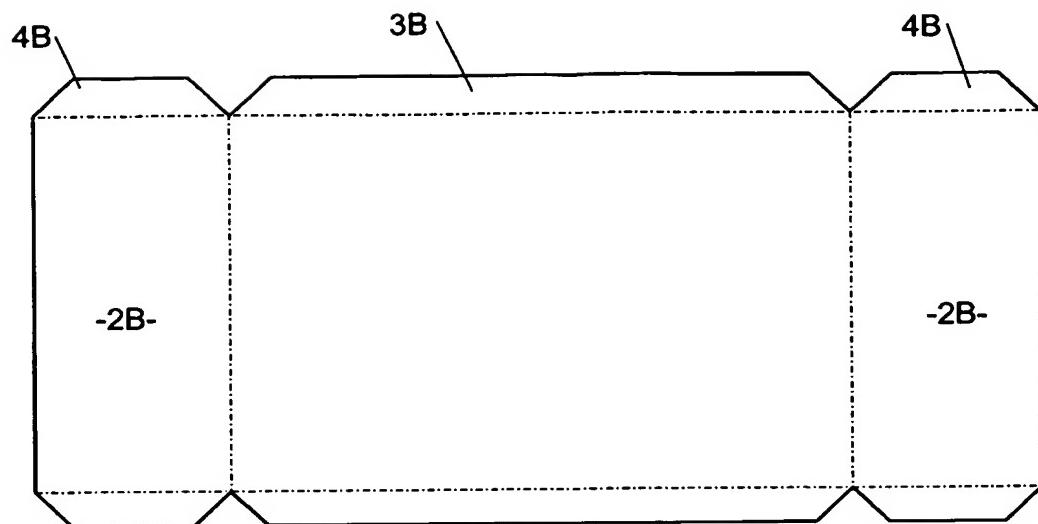
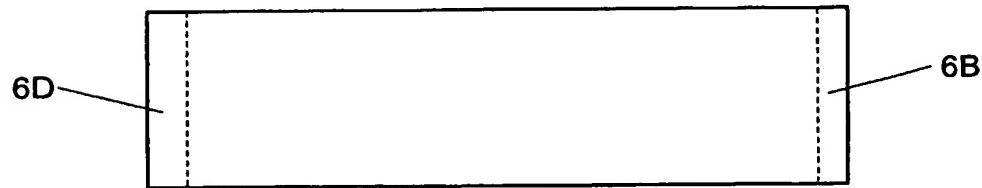
1/8

**FIGURE 1A****FIGURE 1B****FIGURE 1C**

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**FIGURE 1D****FIGURE 1DD****FIGURE 1DDD**

3/8

**FIGURE 2A****FIGURE 2B****FIGURE 2C**

4/8

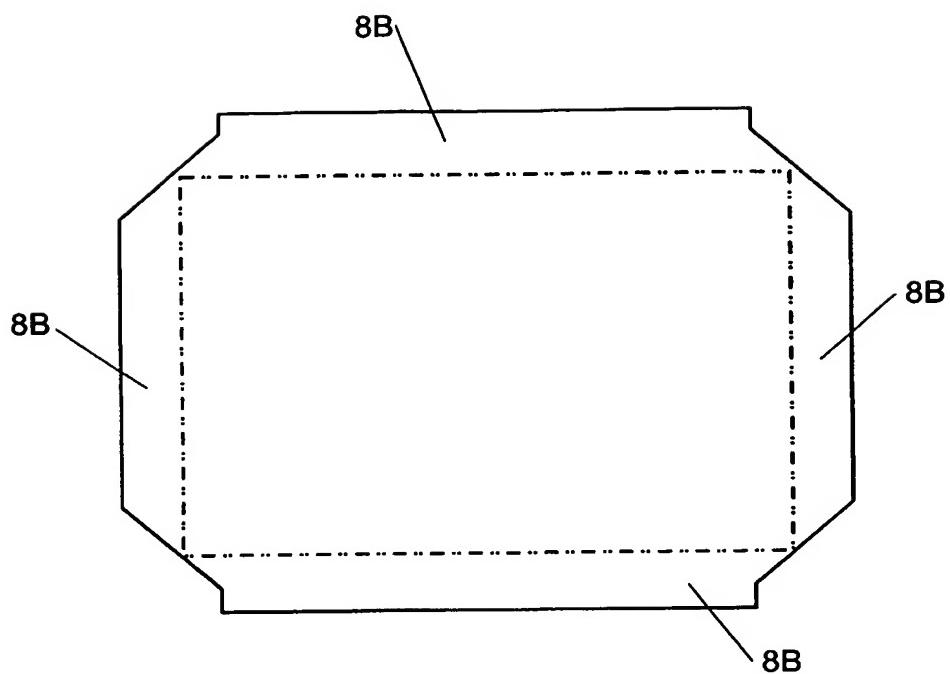


FIGURE 2D

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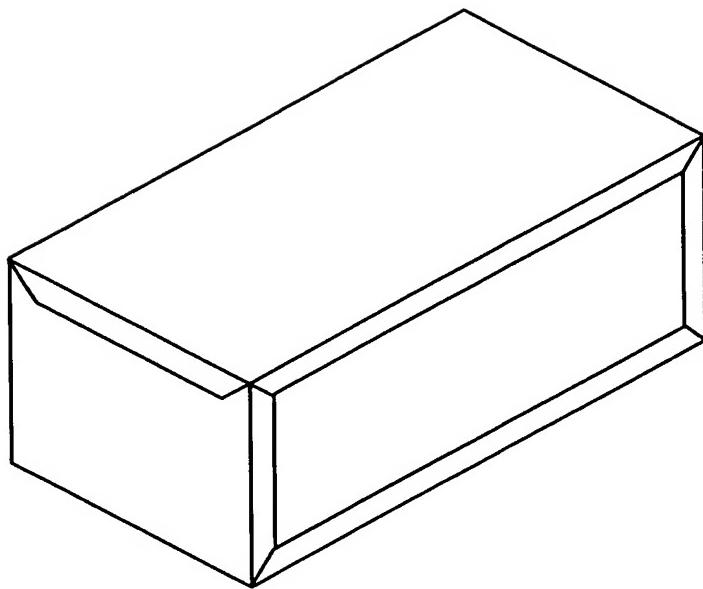


FIGURE 3

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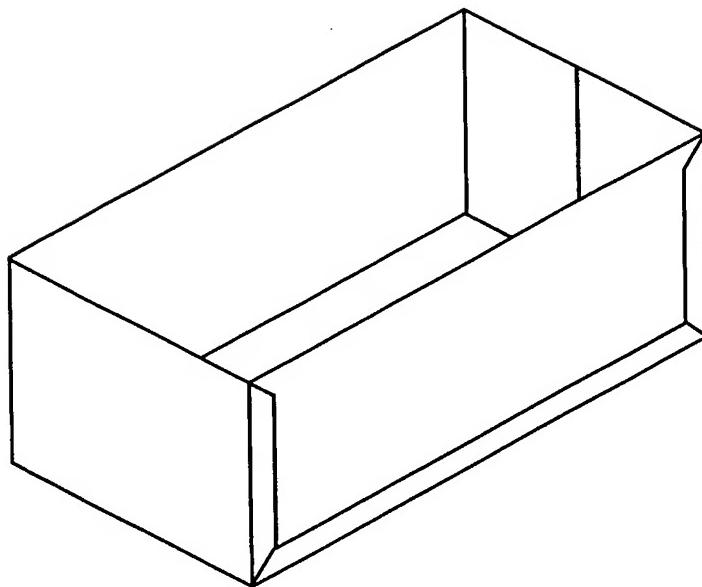


FIGURE 4

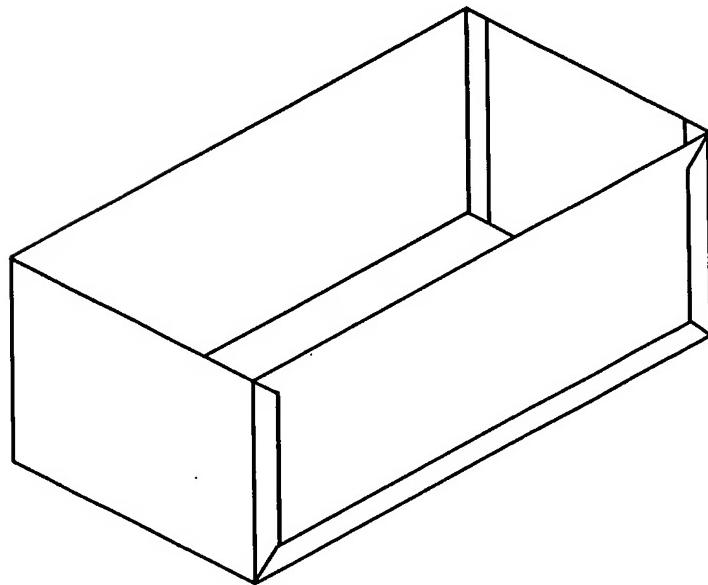
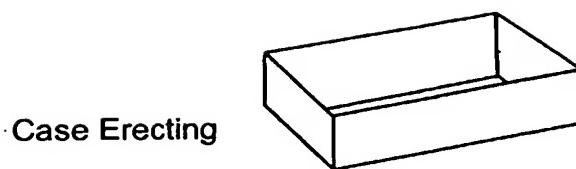
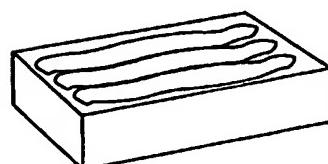


FIGURE 5

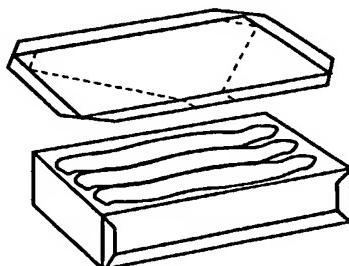
7/8



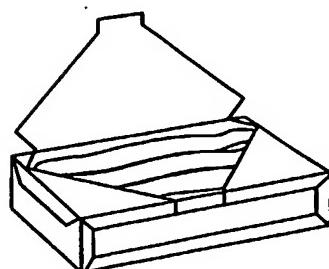
Case Erecting



Case Packing



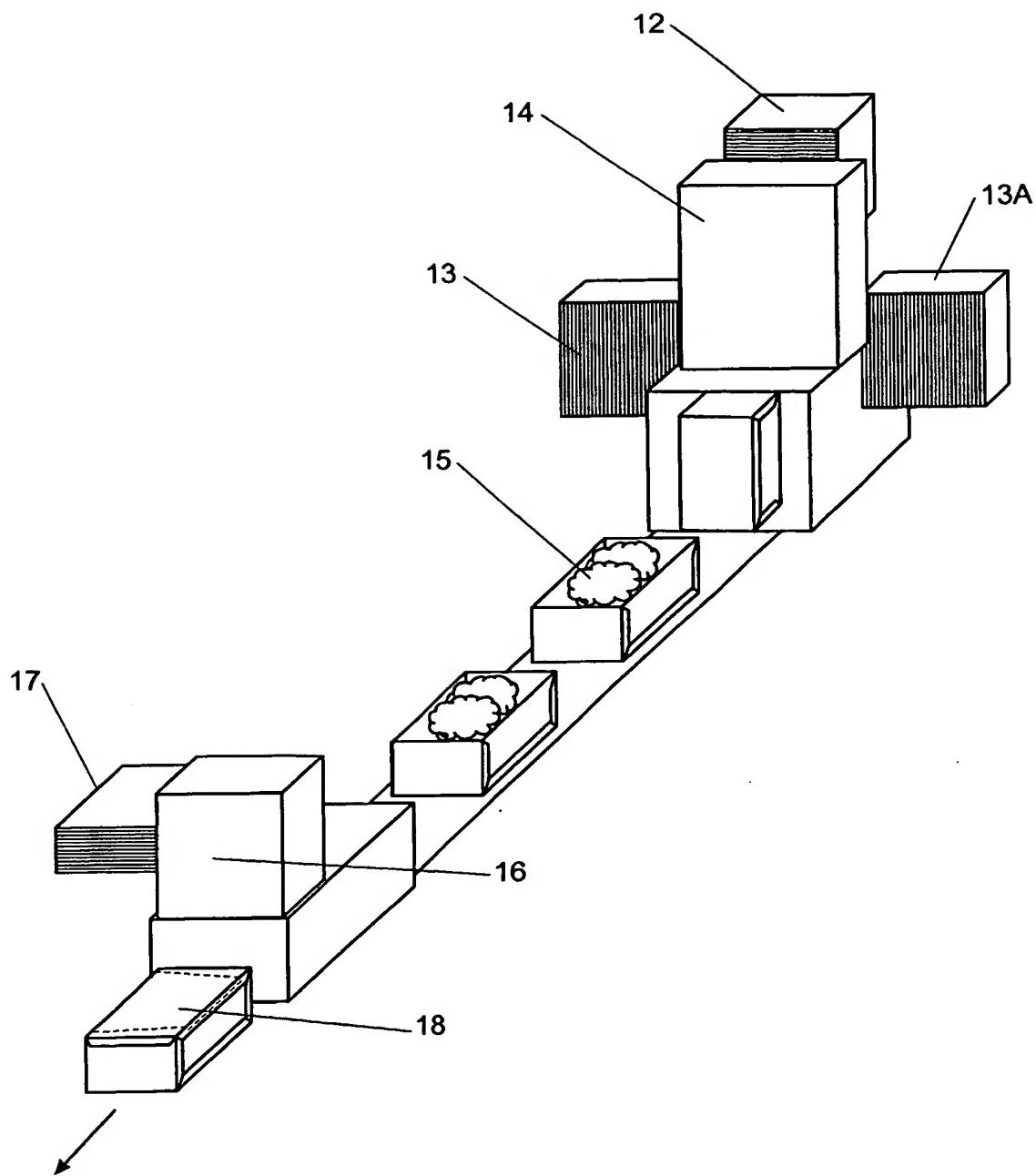
Case Lidding



Access to
Product
Reclosure

FIGURE 6

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**FIGURE 7**

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ03/00138

A. CLASSIFICATION OF SUBJECT MATTERInt. Cl.⁷: B65D 5/32, 5/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: B65D 5/32, 5/70, 5/64, 5/68Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
DWPI IPC B65B 25/-, B65D 5/-, 81/-, 85/-, 21/-, A23B 4/06, 7/04 and keywords: CONTAINER, BOX, CARTON, FOLD, ASSEMBLE, BLANK, PANEL, FLAP, LID, COVER, PLURAL, MULTIPLE, REINFORCE, STIFFEN, OVERLAP, CARDBOARD and similar terms**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6352199 B1 (GARDNER) 5 March 2002 See whole document	1-8, 21, 22, 24 1
Y	See whole document	
X	US 3099379 A (STEASE) 30 July 1963 See whole document	1-8, 21, 22, 24 1
Y	See whole document	
X	US 3863831 A (WOZNIACKI et al.) 4 February 1975 See whole document	1-8, 21, 22, 24 1
Y	See whole document	

 Further documents are listed in the continuation of Box C See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
15 September 2003

Date of mailing of the international search report

24 SEP 2003

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ03/00138

C (Continuation).

DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 00/35762 A1 (TOMA TRADE, S.R.O.) 22 June 2000 See abstract & figures - Lidding with a frangible zone to encourage tear opening	1
Y	US 4449633 A (JOHNSON et al.) 22 May 1984 See abstract & figures - Lidding with a frangible zone to encourage tear opening	1
A	EP 218186 B1 (ALTONAER WELLAPPENFABRIK GMBH) 9 January 1991 See abstract, claims and figures	1-8,21,22,24
A	US 4197789 A (MOEN) 15 April 1980 See whole document	9-20, 23,25

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/NZ03/00138

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report			Patent Family Member				
US	6352199	NONE					
US	3099379	NONE					
US	3863831	CA 1008408	FR 2196636	IT 985008			
WO	00/35762	AU 200015458	CZ 9804185				
US	4449633	AU 53220/79	CA 1115674	DE 2947716			
		FR 2442198	JP 55116564				
EP	218186	DK 4745/86	FI 864015	NO 863966			
		PT 83489					
US	4197789	NONE					
END OF ANNEX							